We claim:

1. A method of optimizing therapeutic efficacy of 6-mercaptopurine drug treatment of an immune-mediated gastrointestinal disorder, comprising:

(a) administering a 6-mercaptopurine drug to a subject having said immune-mediated gastrointestinal disorder; and

(b) determining a level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder,

wherein a level of 6-thioguanine less than a level corresponding to about 230 pmol per $8x10^8$ red blood cells indicates a need to increase the amount of 6-mercaptopurine drug subsequently administered to said subject and

wherein a level of 6-thioguanine greater than a level corresponding to about 400 pmol per $8x10^8$ red blood cells indicates a need to decrease the amount of 6-mercaptopurine drug subsequently administered to said subject.

2. The method of claim 1, wherein said immune-mediated gastrointestinal disorder is inflammatory bowel disease (IBD).

3. The method of claim 2, wherein said subject having IBD is a pediatric subject.

4. The method of claim 1, wherein said immune-mediated gastrointestinal disorder is selected from the group consisting of lymphocytic colitis, microscopic colitis, collagenous colitis, autoimmune enteropathy, allergic gastrointestinal disease and eosinophilic gastrointestinal disease.

5. The method of claim 1, wherein said level of 6-thioguanine is determined in red blood cells.

6. The method of claim 5, wherein said level is determined using high pressure liquid chromatography.

7. A method of reducing toxicity associated with 6-mercaptopurine drug treatment of an immune-mediated gastrointestinal disorder, comprising:

(a) administering a 6-mercaptopurine drug to a subject having said immune-mediated gastrointestinal disorder; and

(b) determining a level of a 6-mercaptopurine metabolite in said subject having said immune-mediated gastrointestinal disorder,

wherein a level of said 6-mercaptopurine metabolite greater than a predetermined toxic level of said 6-mercaptopurine metabolite indicates a need to decrease the amount of 6-mercaptopurine drug subsequently administered to said subject, thereby reducing toxicity associated with 6-mercaptopurine drug treatment of said immune-mediated gastrointestinal disorder.

8. The method of claim 7, wherein said immune-mediated gastrointestinal disorder is IBD.

9. The method of claim 8, wherein said subject having IBD is a pediatric subject.

10. The method of claim 7, wherein said immune-mediated gastrointestinal disorder is selected from the group consisting of lymphocytic colitis, microscopic colitis, collagenous colitis, autoimmune enteropathy, allergic gastrointestinal disease and eosinophilic gastrointestinal disease.

11. The method of claim 7, wherein said 6-mercaptopurine metabolite is 6-thioguanine.

12. The method of claim 11, wherein said predetermined toxic level of 6-thioguanine corresponds to a level of about 400 pmol per $8x10^8$ red blood cells.

13. The method of claim 11, wherein said toxicity associated with 6-mercaptopurine drug treatment is hematologic toxicity.

14. The method of claim 7, wherein said 6-mercaptopurine metabolite is 6-methyl-mercaptopurine.

15. The method of claim 14, wherein said predetermined toxic level of 6-methyl-mercaptopurine corresponds to a level of about 7000 pmol per $8x10^8$ red blood cells.

16. The method of claim 14, wherein said toxicity associated with 6-mercaptopurine treatment is hepatic toxicity.

17. The method of claim 7, wherein said level of 6-mercaptopurine metabolite is determined in red blood cells.

18. The method of claim 17, wherein said level is determined using high pressure liquid chromatography.

19. A method of optimizing therapeutic efficacy and reducing toxicity associated with 6-mercaptopurine drug treatment of an immune-mediated gastrointestinal disorder, comprising:

(a) administering a 6-mercaptopurine drug to a subject having said immune-mediated gastrointestinal disorder;

(b) determining a level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder; and

(c) determining a level of 6-methyl-mercaptopurine in said subject having said immune-mediated gastrointestinal disorder,

wherein a level of 6-thioguanine less than a predetermined minimal therapeutic level indicates a need to increase the amount of 6-mercaptopurine drug subsequently administered to said subject, thereby increasing therapeutic efficacy,

wherein a level of 6-thioguanine greater than a predetermined toxic level of 6-thioguanine indicates a need to decrease the amount of 6-mercaptopurine drug subsequently administered to said subject, thereby reducing toxicity associated with 6-mercaptopurine drug

treatment of said immune-mediated gastrointestinal disorder, and

wherein a level of 6-methyl-mercaptopurine greater than a predetermined toxic level of 6-methyl-mercaptopurine indicates a need to decrease the amount of 6-mercaptopurine drug subsequently administered to said subject, thereby reducing toxicity associated with 6-mercaptopurine drug treatment of said immune-mediated gastrointestinal disorder.

16 ~~20~~. The method of claim 15 ~~19~~, wherein said immune-mediated gastrointestinal disorder is IBD.

17 ~~21~~. The method of claim 16 ~~20~~, wherein said subject having IBD is a pediatric subject.

18 ~~22~~. The method of claim 15 ~~19~~, wherein said immune-mediated gastrointestinal disorder is selected from the group consisting of lymphocytic colitis, microscopic colitis, collagenous colitis, autoimmune enteropathy, allergic gastrointestinal disease and eosinophilic gastrointestinal disease.

~~23~~. The method of claim 19, wherein said predetermined minimal therapeutic level of 6-thioguanine is a level corresponding to about 230 pmol per $8x10^8$ red blood cells.

24. The method of claim 19, wherein said predetermined toxic level of 6-thioguanine is a level corresponding to about 400 pmol per $8x10^8$ red blood cells.

25. The method of claim 19, wherein said predetermined toxic level of 6-methyl-mercaptopurine is a level corresponding to about 7000 pmol per $8x10^8$ red blood cells.

26. The method of claim 19, wherein said predetermined minimal therapeutic level of 6-thioguanine is a level corresponding to about 230 pmol per $8x10^8$ red blood cells, said predetermined toxic level of 6-thioguanine is a level corresponding to about 400 pmol per $8x10^8$ red blood cells, and said predetermined toxic level of 6-methyl-mercaptopurine is a level corresponding to about 7000 pmol per $8x10^8$ red blood cells.

19 15
27. The method of claim 19, wherein said level of 6-thioguanine and said level of 6-methyl-mercaptopurine each is determined in red blood cells.

20 19
28. The method of claim 27, wherein said level is determined using high pressure liquid chromatography.

21 15
29. The method of claim 19, wherein said toxicity associated with said 6-mercaptopurine drug treatment is selected from the group consisting of hepatic toxicity and hematologic toxicity.

B

30. A method of optimizing therapeutic efficacy of 6-mercaptopurine drug treatment of a non-IBD autoimmune disease, comprising:

(a) administering a 6-mercaptopurine drug to a subject having said non-IBD autoimmune disease; and

(b) determining a level of 6-thioguanine in said subject having said non-IBD autoimmune disease,

wherein a level of 6-thioguanine less than a minimal therapeutic level indicates a need to increase the amount of 6-mercaptopurine drug subsequently administered to said subject and

wherein a level of 6-thioguanine greater than a level corresponding to a predetermined toxic level indicates a need to decrease the amount of 6-mercaptopurine drug subsequently administered to said subject.

31. The method of claim 30, wherein said minimal therapeutic level is about 230 pmol per $8x10^8$ red blood cells.

32. The method of claim 30, wherein said predetermined toxic level is about 400 pmol per $8x10^8$ red blood cells.

33. The method of claim 30, wherein said level of ~~6-mercaptopurine~~ 6-thioguanine metabolite is determined in red blood cells.

34. The method of claim 33, wherein said level is determined using high pressure liquid chromatography.